[PROJECT TITLE]

A Dissertation Submitted
in Partial Fulfilment of the Requirements
for the Degree of

MASTER OF SCIENCE

in

[Department Name]

by

[Full Name]
(Roll No. [Roll No.])

to

SCHOOL OF [DEPARTMENT NAME]
INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
THIRUVANANTHAPURAM - 695 551, INDIA

August 2025

DECLARATION

I, [**Full Name**] (**Roll No:** [**Roll Number**]), hereby declare that, this report entitled **"**[**Project Title**]**"** submitted to Indian Institute of Science Education and Research Thiruvananthapuram towards the partial requirement of **Master of Science** in [**Department Name**], is an original work carried out by me under the supervision of [**Project Guide(s)**] and has not formed the basis for the award of any degree or diploma, in this or any other institution or university. I have sincerely tried to uphold academic ethics and honesty. Whenever a piece of external information or statement or result is used then, that has been duly acknowledged and cited.

Thiruvananthapuram - 695 551 [**Full Name**]

August 2025

CERTIFICATE

This is to certify that the work contained in this project report entitled **"[Project Title]"** submitted by **[Full Name]** (**Roll No: [Roll Number]**) to Indian Institute of Science Education and Research, Thiruvananthapuram towards the partial requirement of **[Master of Science/ Doctor of Philosophy]** in **[Department Name]** has been carried out by [him/her/them] under my supervision and that it has not been submitted elsewhere for the award of any degree.

Thiruvananthapuram - 695 551 [Project Supervisor]

August 2025 Project Supervisor

ACKNOWLEDGEMENT

[*Sample:*] I thank everyone who has assisted me in seeing this project through to its completion. I would like to first express my profound gratitude and deepest regards to [Project Guide(s)], IISER Thiruvananthapuram, and sincerely wish to acknowledge [his/her/their] vision, guidance, valuable feedback and constant support throughout the duration of this project.

I am indebted to [Insert Names] for their steadfast encouragement and time. I am lastly grateful to the Indian Institute of Science Education and Research Thiruvananthapuram for providing the necessary resources and facilities to complete this project to the best of my ability.

Thiruvananthapuram - 695 551 **[Full Name]**

August 2025

ABSTRACT

Name of the student: [**Full Name**] Roll No: [**Roll No.**]
Degree for which submitted: [**M.Sc./Ph.D.**] Department: **School of** [**Dept.**]
Thesis title: [**Project Title**]
Thesis supervisor: [**Project Supervisor**]
Date of thesis submission: **August 2025**

The main aim of the project .....

Keywords:

[Insert Keywords]

Contents

List of Figures

List of Tables

Notations and Abbreviations

No notation is used in this document. No abbreviations have been used either.

Chapter 1

Introduction

Introductory lines...

1.1 Section-1 Name

Some text here.

Definition 1.1.1. Some definition...

Theorem 1.1.2. *Some theorem...*

Proof. Proof is as follows... □

Corollary 1.1.3. *A corollary to Theorem 1.1.2 is...*

Remark 1.1.4. Some remark...

1.1.1 Equations and Math Examples

Equations can be typed as follows:

$$f(x) = \frac{x^2 - 5x + 6}{(e^x - 2)/10} = 10\frac{(x-2)(x-3)}{e^x - 2} \tag{1.1}$$

Referencing labelled objects: equation (1.1), or Theorem 1.1.2 for the theorem. Use tilde (~) to create non-breaking spaces.

For multiline equations,

$$\text{Array in Math Mode} \quad \begin{cases} -\Delta u + \lambda u &= |u|^{p-2}, & \text{in } \Omega \\ u &\geq 0, & u \in H_0^1(\Omega) \end{cases} \tag{1.2}$$

Using `array` in math mode or `eqnarray` is a quick and easy way to get the most customisable equation output, but is outdated and prone to errors, especially for longer equations. Use of alternate multiline equation environments like `multiline`(*), `align`(*), `gather`(*) or `split` in any math-mode environment is recommended.

$$g(\theta) = i\theta \qquad = (i\theta)\ln e \tag{1.3}$$

$$= \ln(e^{i\theta}) \qquad = \ln(\cos\theta + i\sin\theta) \tag{1.4}$$

1.2 Section-2 Name

This is how matrices in LaTeX look:

$$\begin{pmatrix} \sin\theta & \cos\theta \\ -\cos\theta & \sin\theta \end{pmatrix} \times \begin{pmatrix} \sin\theta & \cos\theta \\ -\cos\theta & \sin\theta \end{pmatrix} = \begin{pmatrix} \sin^2\theta - \cos^2\theta & 2\cos\theta\sin\theta \\ -2\cos\theta\sin\theta & -\cos^2\theta + \sin^2\theta \end{pmatrix}$$

$$= \begin{pmatrix} -\cos 2\theta & \sin 2\theta \\ -\sin 2\theta & -\cos 2\theta \end{pmatrix}$$

The brackets of a given matrix depend on the type of matrix called.

Similarly, here is a quick truth table:

P	Q	$\neg P$	$\neg P \to (P \vee Q)$
T	T	F	T
T	F	F	T
F	T	T	T
F	F	T	F

Remark 1.2.1. Defining a table like this does not count in the LoT; use the `table` environment instead.

Remark 1.2.2. You can cite sources in footnotes as so.[1] Ensure `ref.bib` is configured for biblatex. Disable verbose style to switch to inline references.

[1] G.H. Golub and C.F. Van Loan. *Matrix Computations*. Second Edition. The John Hopkins University Press, 1989, pp. xiii+283.

1.2.1 Subsections

Subsubsection Example

Subsubsections do not appear in the ToC and lack numbering[2]. To skip numbering in sections/subsections, use `\section*{`*section_name*`}`.

Theorem 1.2.3. *Some theorem...*

Proof. The proof is as follows... □

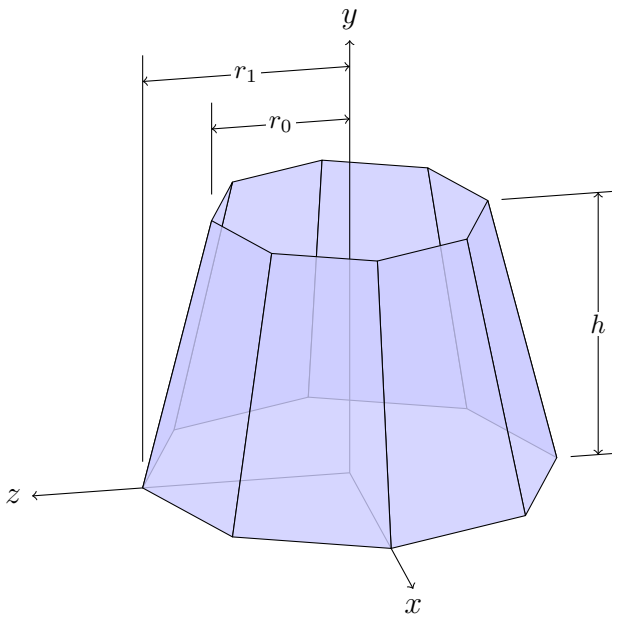

Figure 1.1: 3D Cone designed by Gene R. using TikZ, see `Images/Figures/3D_Cone.tex` for code.

Remark 1.2.4. Figures float by default. Position may differ from the order in the code. Use optional arguments [htbp] (here, top, bottom, next page) to influence placement.

[2]Regular footnotes work normally. For more, see https://www.overleaf.com/learn/latex/Footnotes

1.3 Sample Question and Proof

Suppose A_i is a connected subset of a topological space X for $i = 1, \ldots, n$, and $A_i \cap A_{i+1} \neq \emptyset$ for all i. Prove that $A = \bigcup_{i=1}^{n} A_i$ is connected.

Proof by Contradiction. Assume A is disconnected. Then A can be written as a union of two non-empty, disjoint, relatively open subsets, say X and Y. Take $x \in X$ and $y \in Y$, with $x \in A_j$ and $y \in A_k$ for some $j \leq k$. Then

$$\begin{aligned} & A_l \cap A_{l+1} \neq \emptyset \quad \forall l = j, \ldots, k-1 \\ \Rightarrow & \bigcup_{i=j}^{l} A_i \text{ is connected } \forall l = j, \ldots, k \end{aligned} \tag{1.5}$$

Hence, $\bigcup_{i=j}^{k} A_i$ contains both x and y and is connected, contradicting the disjointness of X and Y. Therefore, A is connected. □

Remark 1.3.1. Use `\quad`, `\qquad`, `\,`, `\!`, etc. to adjust spacing in equations as needed.

Appendices

Appendix A

Long Appendix Title Here

Write your Appendix content here. Sections and subsections can be used as well.

A.1 First Appendix Section

A.1.1 First Appendix Subsection

First Appendix Subsubsection

Appendices will show up in the ToC numbered as letters. This is of course totally customizable, please refer to the CTAN documentation (https://ctan.org/pkg/appendix?lang=en) for further clarity on the same.

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